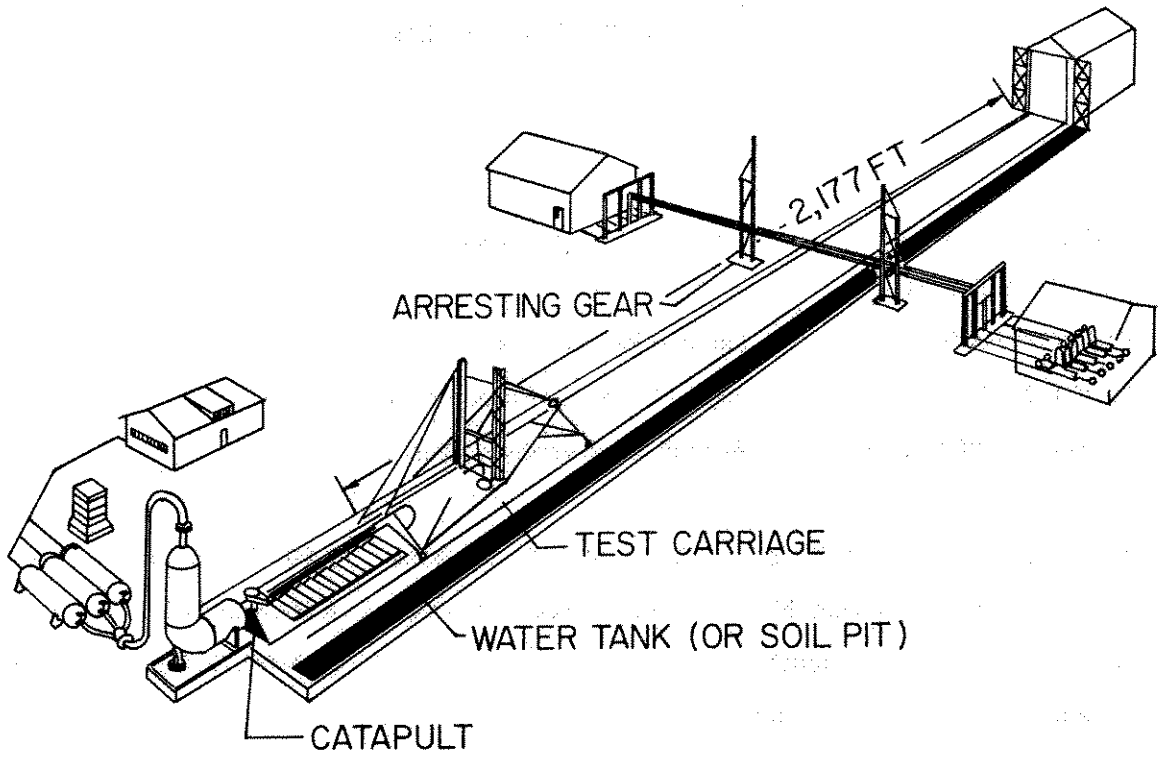
LANGLEY RESEARCH CENTER

FACILITY LOCATION	Hampton, Virginia 23665
FACILITY NUMBER	1257
FACILITY NAME	Aircraft Landing Loads and Traction Facility
FUNCTIONAL NAME	Landing Loads Track
TECHNOLOGICAL AREAS	Gear loads and motions during landing impact; braking and steering behavior of landing systems; tire traction studies

INITIAL COST	$ 2,500 K	YR. BUILT	1953	STATUS CODE	Active
ACCUM. COST	$ 4,360 K	NASA B.O.D.	1954	OWNER CODE	NASA
LIFE EXPECT.	Indef.			OPER. CODE	NASA

CONTRACTOR NAME (if contr. oper.)	
POTENTIAL	The carriage can be modified to test larger gear specimens and air cushion landing systems. The track can be lengthened to increase test velocity and duration.
PLANS	Modification of the existing carriage is planned for FY 1976; a larger test carriage that will be interchangeable with the existing carriage is planned for FY 1978.
OTHER INFO SOURCES	Influence of Tire Tread Pattern and Runway Surface Condition on Braking Friction and Rolling Resistance of a Modern Aircraft Tire, NASA TN D-1376, September, 1962
COGNIZANT ORG. COMPONENT	Structures and Dynamics Division
LOCAL CONTACT FOR FURTHER INFO	Chief, Research Facilities Engineering Division, Code 56.000; (804) 827-3171

January 1974



DESCRIPTION

The facility consists of a rail system 2177 ft long x 30 ft wide, a large hydraulic catapult system, an arresting system, and 2 test carriages. The catapult develops up to 450,000 lb of thrust by releasing pressurized water through a 7-in.-diameter nozzle to impinge upon a turning bucket at the end of each test carriage. Following acceleration, the carriage coasts through a 1200-ft test section and is brought to a stop by arresting cables interconnected to 20 Navy Mark IV arresting gear engines.

The main test carriage was designed primarily for landing gear tests; it features a drop frame to which a gear specimen is attached. During testing the drop frame can be either released from a predetermined height to permit a simulated impact, or hydraulically downloaded to increase wheel loadings to 50,000 lb for studies of tire behavior under high-speed rolling, braking, or yawing conditions. The main carriage weighs approximately 120,000 lb; the gear loading capacity is 20,000 lb for impact and 50,000 lb for steady state. Forward speed of the carriage is 110 knots maximum, and vertical impact velocity is 20 ft/sec.

The small test carriage was designed for hydrodynamics research but has been modified to accommodate various landing gear systems which generally require somewhat lighter loadings than those of the main carriage. Much of the testing with this carriage uses a runway test surface installed in the 8-ft-wide x 5-ft-deep tank that parallels the track. The small carriage weighs approximately 60,000 lb; the gear loading capacity is approximately 6000 lb; and the forward speed is 120 knots maximum.